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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/667,746

09/22/2003

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37317 7590 05/25/2007
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EXAMINER

PARKER, FREDERICK JOHN

ART UNIT

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05/25/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/667,746	Applicant(s) STEVENSON ET AL.	
	Examiner Frederick J. Parker	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 3 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/3/07 has been entered. It appears Applicants intended only for the Examiner to re-consider the re-submitted After Final papers of 1-25-07.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1,4,6,9,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jenett US 2628172 in view of Hoopman et al US 5681217.

Jenett teaches printing designs, decoration, protective surfaces, etc to a polyethylene (an elastomer) surface (per claim 2) by coating the surface with a dispersion of fine polyethylene particles (per claim 3), an organic liquid medium (same as carrier, per claim 7), and a suitable resin tackifier, after which the coated surface is heated 80-200 C (175-392 F, encompassing the range of claim 9/c) to evaporate solvent (drying) and cause fusion/ bonding of the coating to the substrate (col. 2, 14-30; col. 4, 59-65; col. 5, 9-21). The dispersion fuses at a sufficient temperature which prevents thermal distortion of the substrate (col. 3, 51-5; col. 2, 14-20; col. 4,

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56-65). Particle sizes of the polyethylene (PE) particles is 0.5-5 microns which is less than 140 microns per claims 4 and 10. Addition of inorganic particles is not cited.

Hoopman teaches to apply wear-resistant textured surfaces to polymeric substrates (encompassing elastomeric/ PE resins) by dispersing inorganic particles into a resin binder such as thermoplastic polymer materials (encompassing elastomers), col. 11, 56 to col. 12, 35, and heating to cause fusion. Since Hoopman teaches forming protective/ wear-resistant layers comprising a polymer binder with inorganic particles, and Jenett explicitly teaches forming coating as protective surfaces, there would have been the suggestion to improve the protective surfaces of Jenett by incorporating the inorganic particles of Hoopman to improve the wear-resistant/ protective properties of the dispersion coatings on the polyethylene. As to claim 1 b, the inorganic particles range from 0.1-1000 microns, preferably 0.1-100 microns, which would pass through a 15 mesh (1.1 mm) mesh sieve.

As to claims 6 and 9, while the proportion of tackifier to polyethylene/ polyolefin powder and solvents are not explicitly cited, it would have been apparent from column 5 of Jenett that the amounts of components would have been determined by optimization by one of ordinary skill to provide a suitable coating dispersion.

Column 5, 33-54 of Jenett teaches the fusion temperature of the coating “up to just below the melting point of the base, e.g. about 5 C below”. Thus the sole difference between the claims and combination of references is that Jenett just approaches the melting point whereas Applicants just reach the melting point, so the difference is a matter of at most a few degrees. It is well established that where the principle difference between a claimed process and the prior art is merely a temperature difference, it is incumbent upon the Applicant to establish criticality of that

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difference, Ex parte Khusid 174 USPQ 59. In the instant case the difference would have been expected to produce similar results since melting point of polymers such as PE is not instantaneous (depending on the relative amounts of crystalline and amorphous phases) and that some surface melting would have been expected just below a recited melting point value.

Further, it is the Examiner's position that increasing temperature of the only a surface to a point to just where the surface commences melting/ becomes tacky would have been an obvious variation to provide greater adhesion of the applied coating material, as is well-known in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Jenett by incorporating inorganic particles as disclosed by Hoopman et al to a tacky substrate to provide an improved protective coating with enhanced wear-resistance and greater particle adhesion.

3. Claims 5,7,11,12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jenett US 2628172 in view of Hoopman et al US 5681217 and further in view of Brant et al US 5114763.

Jenett and Hoopman et al are cited for the reasons above which are incorporated herein. Specific aliphatic hydrocarbon tackifiers are not taught. However, Brant teaches successfully forming polyethylene (elastomer) films using a compatible tackifier including aliphatic and cycloaliphatic hydrocarbon resins (col. 6, 5-19).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Jenett in view of Hoopman et al by incorporating the tackifiers of

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Brant et al because aliphatic and cycloaliphatic hydrocarbon resins are known tackifiers for polyethylene formulations.

4. Claims 8,13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jenett US 2628172 in view of Hoopman et al US 5681217 and further in view of Kagota et al US 5252393.

Jenett and Hoopman et al are cited for the reasons above which are incorporated herein.

Aqueous carriers are not taught.

Kagota et al teaches forming aqueous polyethylene dispersions comprising resin particles and a suitable tackifier. While the dispersions are not used for identical coatings, the reference clearly teaches that an aqueous carrier media successfully forms polyethylene-tackifier dispersions.

Since one of ordinary skill would have been motivated to substitute the organic solvent carriers of the primary reference with water to overcome health, regulatory, and flammability problems associated with organic hydrocarbon solvents, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Jenett in view of Hoopman et al by incorporating the aqueous carrier of Kagota et al for the hydrocarbon carrier of the dispersion to overcome the health, regulatory, and flammability problems associated with organic hydrocarbon solvents.

Response to Arguments

Jenett states that for his process to be successful...

“The temperature and time are selected so that the liquid organic medium is substantially evaporated and the deposited polyethylene is fused without harming the base (col. 5, 46-49).

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“...the deposited polyethylene material is fused to give a continuous film in the printed area, and is also bonded permanently and inseparably to the film base or substrate” (col. 5, 50-54).

Jenett also states the temperature of heating may be **“up to just below the melting point of the base, e.g. about 5 C”**, and **“without harming the base”**. Applicants are arguing that elevating the temperature up the additional few degrees is not obvious. The Examiner disagrees. Applicants are reminded that a patentability is not based upon simply a difference in teachings, but a difference which would not have been obvious to one of ordinary skill; a difference which sets a clear line of patentable demarcation between the prior art and the claimed application. Obviousness is not the result of a rigid formulation dissociated from consideration of the facts, but rather the common sense of those skilled in the art demonstrates why some combinations would have been obvious and others would not, *KSR v. Teleflex* 2007. Taking the temperature to within about 5 degrees C of the melting point of the base versus just to the melting point of the base clearly is an obvious variation with a predictable outcome, particularly given the heating times cited by Jenett, e.g. “a few second to several minutes”. Both Jenett and Applicants prohibit harming/ thermal distortion of the PE substrate/ object. Since Jenett recognizes fusion is responsible for providing a continuous film which is also bonded permanently and inseparably to the film base or substrate, the Examiner persists that Applicants variation is well within the purview of one skilled in the art, and fails to provide a patentable distinction.

On the other hand, Applicants are invited to provide a clear and convincing showing that the small temperature difference between Jenett and Applicants claims provide a patentable difference, e.g. unexpected results. The Examiner surmises the sole difference might be slightly

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better adhesion but Jenett recognizes on col. 5, 46-50 the cause-effective relationship between time and temperature, while balancing the need to preserve the integrity of the substrate/ base. Applicants assert they have done this by establishing criticality of the difference; the Examiner obviously is unconvinced. It is interesting Applicants argue that without fusion of the coating into the base there can be no permanency of the coating, when Jenett requires the coating "be bonded permanently and inseparably to the base film or substrate" and further demonstrates in EX. 2 the coating is "entirely resistant to the adhesive tape test" (industry test standard for adhesion). This provides yet another piece of evidence that Jenett's process providing similar outcomes to Applicants therefore had similar mechanisms occurring to achieve those outcomes.

The Examiner refers to the "Polymer Science Dictionary" Page 307 already of record to illustrate the state of the art and what would have been within the purview of one skilled in the art at the time the invention was made. It states that recited melting points actually occur over a wider range of temperature- typically 10-20 C- and that quoted melting points are imprecise and generally indicative of the high end of the range, that is melting in part has already occurred when the quoted melting point temperature is achieved. Thus one skilled in the art would have recognized that the small temperature difference of "about 5 C below" the melting point of the PE base would have involved at least some degree of melting of the base surface, which would account for Jenett's observation that the coating is "is bonded permanently and inseparably to the film base or substrate". Thus the skilled artisan would have recognized that some degree of co-fusion/ melting between base and coating during thermal treatment would have occurred, regardless of whether or not Jenett recognized or expressed the mechanism of bonding (which is not required for a patent).

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The Examiner points out the DTA curve on page 3 of Remarks has no scale on the x-axis so it is impossible for him to ascertain if the melting point occurs in an interval of 2 degrees or 25 degrees. Further, it is unclear what PE is being shown: HDPE or LDPE, degree of crystallinity present, etc. Applicants make arguments relative to crystalline/ semi-crystalline polymers on page 4, but Osborn et al clearly states on page 15 that PE contains both crystalline and amorphous regions, the amounts depending on the material and thermal properties including melting are dictated by both amorphous and crystalline portions. Applicants simply claim a "polyethylene object" without any specificity as to crystallinity. Applicants even on page 5, top of Remarks, assume they are using a crystalline PE which is never claimed. Hence, the melting of amorphous phases of the base PE object, which appear to be inevitably present according to Applicants' own Osborne reference, would begin to melt before that of the crystalline regions, but nonetheless melting would still be occurring. Further more, a 1953 patent would not have necessarily recognized the presence of the various crystallinities of PE and their effects on melting point. At 4 or 5 degrees below the melting point of the base, it is easy to see that some localized melting of amorphous portions of the base would take place, and simple recognition of this by the advance of materials characterization technology does not rise to the level of patentability

As to the argument mid-page 6 that the rejection should be one of anticipation 35 USC 102 rather than 35 USC 103, this argument is entirely without basis because the 35 USC 103 is necessitated by step (b) of independent claims which is the reason for introducing Hoopman and hence the reason for the obviousness rejection! The reason for the additional secondary

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references are spelled out in the rejections and have nothing to do with the melt temperature issue, as was never the Examiner's intention.


To Applicants' credit, they have shown that crystalline polymers such as PE have melt ranges which "are usually narrow", whatever "narrow" means. However, the attached references also note that materials are a mixture of crystalline and amorphous domains which will effect DTA curves. A review of claim 1 by the reader notes the claim merely requires polyethylene without further description such that it is unclear what is actually meant relative to arguments. According to the supplied Osborn reference, this may result in great variations in material/ melting behavior and DTA curves; see pages 14-15. Thus Applicants arguments still do not convince this Examiner that Applicants claims provide a clear line of demarcation to establish patentability.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick J. Parker whose telephone number is 571/ 272-1426. The examiner can normally be reached on Mon-Thur. 6:15am -3:45pm, and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571/272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Frederick J. Parker
Primary Examiner
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fjp